FIG.1

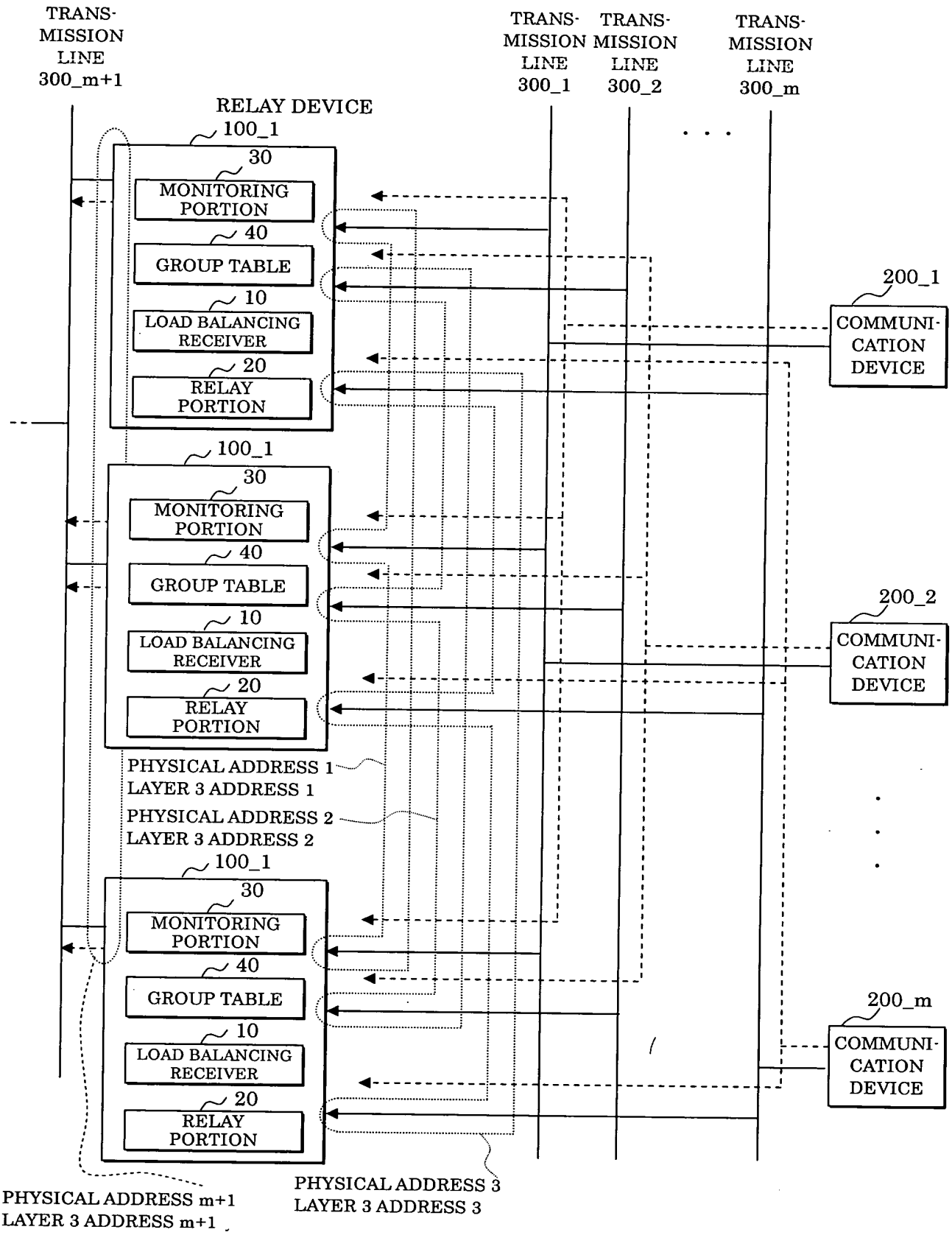

TRANS-
MISSION
LINE
300_m+1
TRANS-
MISSION
LINE
300_1
TRANS-
MISSION
LINE
300_2
TRANS-
MISSION
LINE
300_m
RELAY DEVICE
100_1
30
MONITORING PORTION
40
GROUP TABLE
10
LOAD BALANCING RECEIVER
20
RELAY PORTION
200_1
COMMUNI-
CATION
DEVICE
100_1
30
MONITORING PORTION
40
GROUP TABLE
10
LOAD BALANCING RECEIVER
20
RELAY PORTION
200_2
COMMUNI-
CATION
DEVICE
PHYSICAL ADDRESS 1
LAYER 3 ADDRESS 1
PHYSICAL ADDRESS 2
LAYER 3 ADDRESS 2
100_1
30
MONITORING PORTION
40
GROUP TABLE
10
LOAD BALANCING RECEIVER
20
RELAY PORTION
200_m
COMMUNI-
CATION
DEVICE
PHYSICAL ADDRESS m+1
LAYER 3 ADDRESS m+1
PHYSICAL ADDRESS 3
LAYER 3 ADDRESS 3

FIG.2

40 GROUP TABLE

RELAY DEVICE ADDRESS	GROUP ID	WEIGHT	PREFERENCE
RELAY DEVICE 100_1	1	1	10
RELAY DEVICE 100_2	1	2	20
. . .	. . .	. . .	. . .
RELAY DEVICE 100_m-1	2	1	40
RELAY DEVICE 100_m	2	1	50

FIG.3

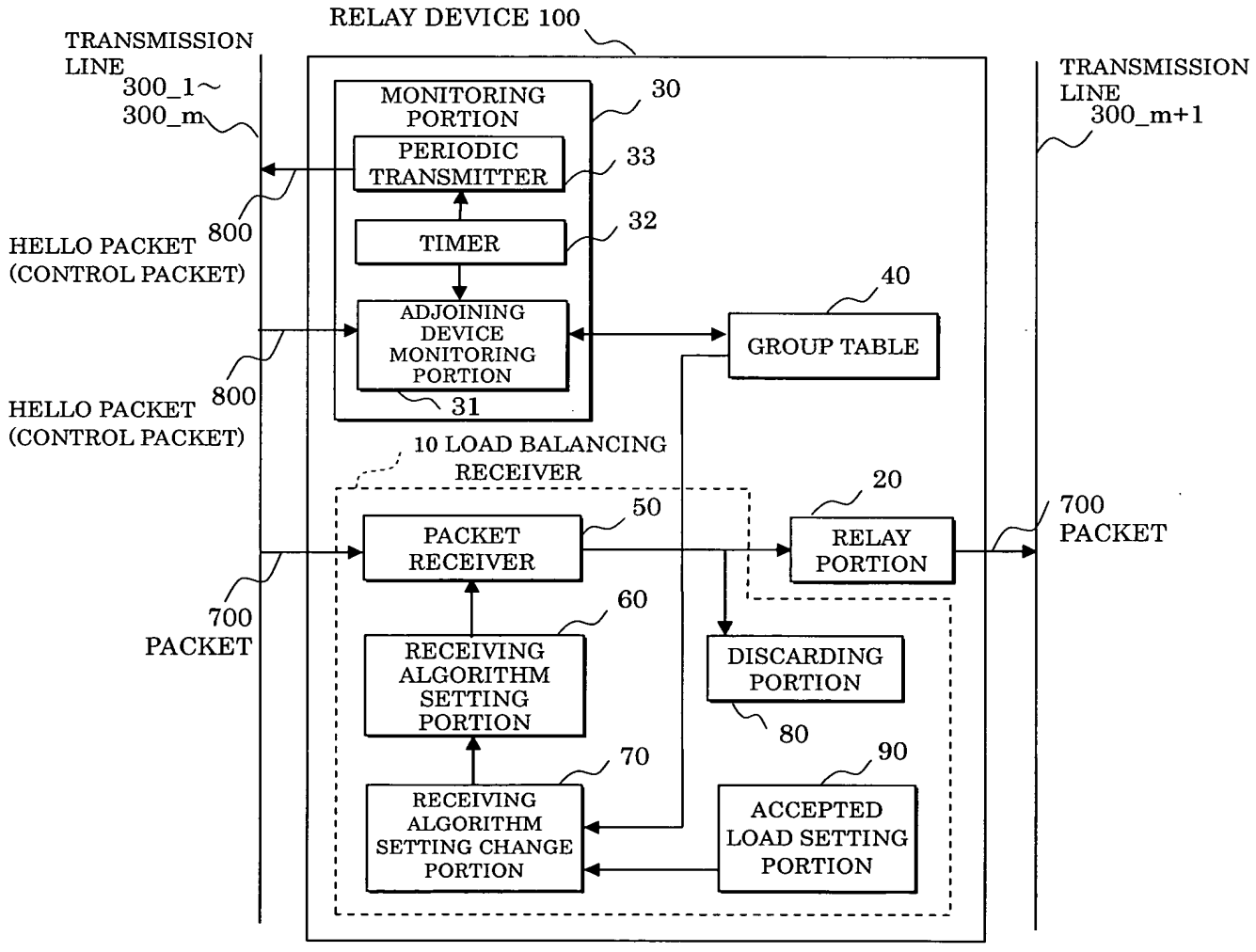


FIG.4

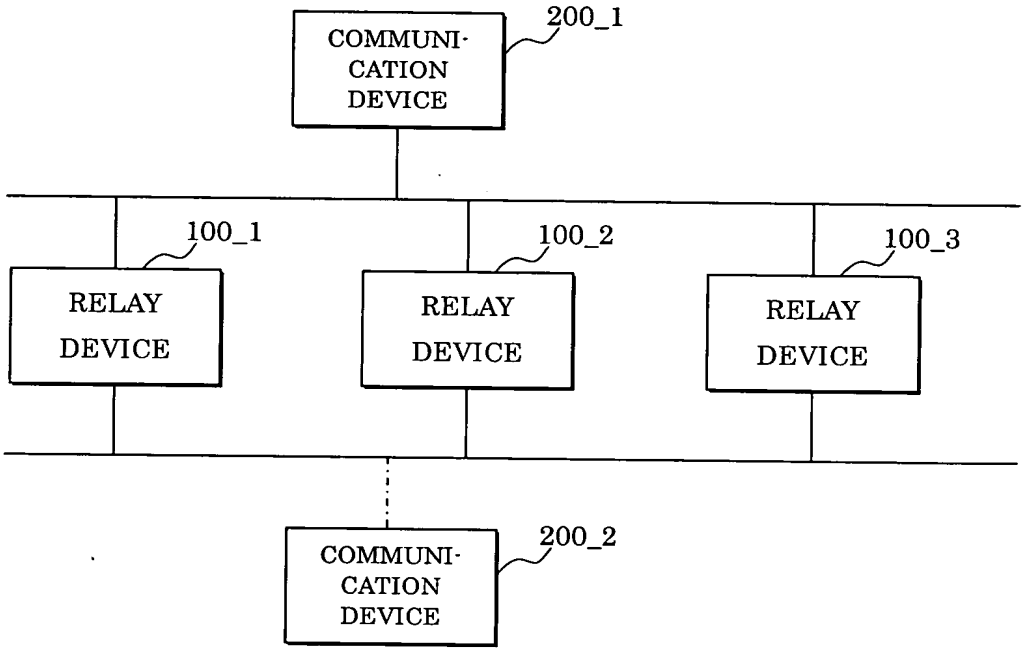


FIG.5

40 GROUP TABLE

RELAY DEVICE ADDRESS	GROUP ID	WEIGHT	PREFERENCE
RELAY DEVICE 100_1	1	1	10
RELAY DEVICE 100_2	1	2	20
RELAY DEVICE 100_3	1	1	30

FIG.6

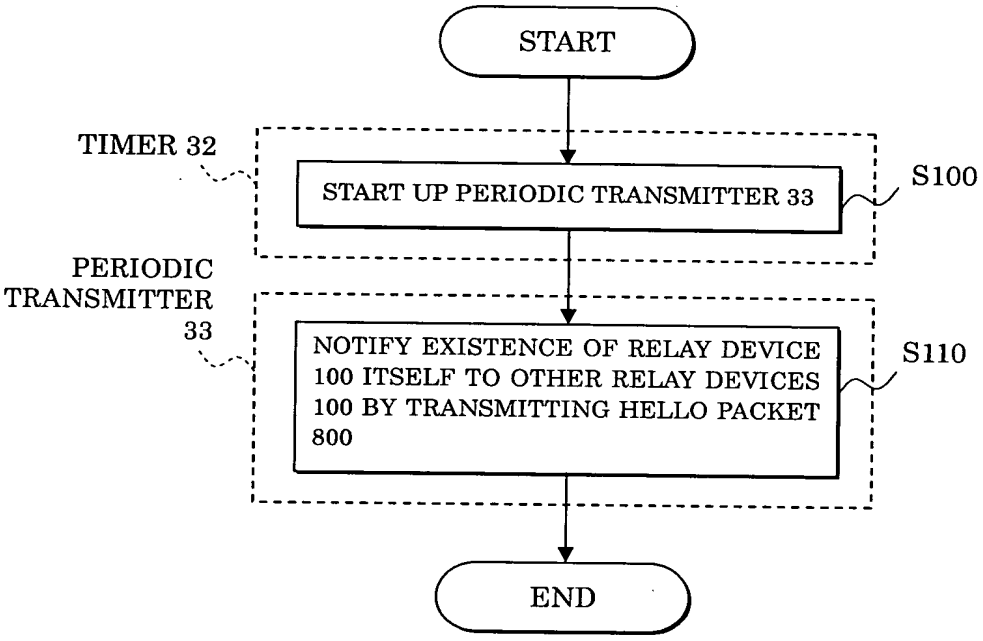

START
TIMER 32
START UP PERIODIC TRANSMITTER 33
S100
PERIODIC TRANSMITTER 33
NOTIFY EXISTENCE OF RELAY DEVICE 100 ITSELF TO OTHER RELAY DEVICES 100 BY TRANSMITTING HELLO PACKET 800
S110
END

FIG.7

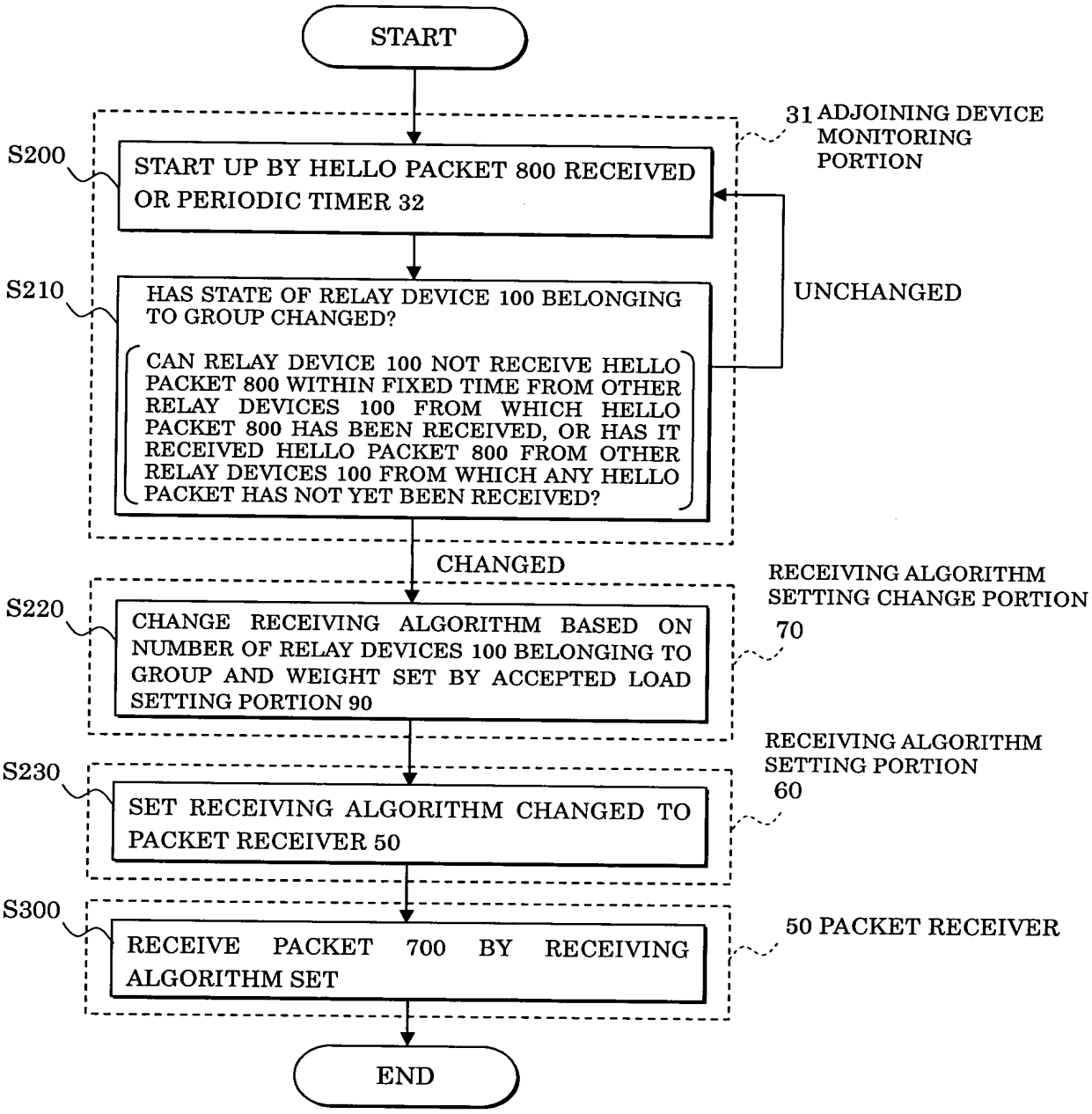

START
31 ADJOINING DEVICE MONITORING PORTION
S200
START UP BY HELLO PACKET 800 RECEIVED OR PERIODIC TIMER 32
S210
HAS STATE OF RELAY DEVICE 100 BELONGING TO GROUP CHANGED?
CAN RELAY DEVICE 100 NOT RECEIVE HELLO PACKET 800 WITHIN FIXED TIME FROM OTHER RELAY DEVICES 100 FROM WHICH HELLO PACKET 800 HAS BEEN RECEIVED, OR HAS IT RECEIVED HELLO PACKET 800 FROM OTHER RELAY DEVICES 100 FROM WHICH ANY HELLO PACKET HAS NOT YET BEEN RECEIVED?
UNCHANGED
CHANGED
RECEIVING ALGORITHM SETTING CHANGE PORTION 70
S220
CHANGE RECEIVING ALGORITHM BASED ON NUMBER OF RELAY DEVICES 100 BELONGING TO GROUP AND WEIGHT SET BY ACCEPTED LOAD SETTING PORTION 90
RECEIVING ALGORITHM SETTING PORTION 60
S230
SET RECEIVING ALGORITHM CHANGED TO PACKET RECEIVER 50
S300
RECEIVE PACKET 700 BY RECEIVING ALGORITHM SET
50 PACKET RECEIVER
END

FIG.8

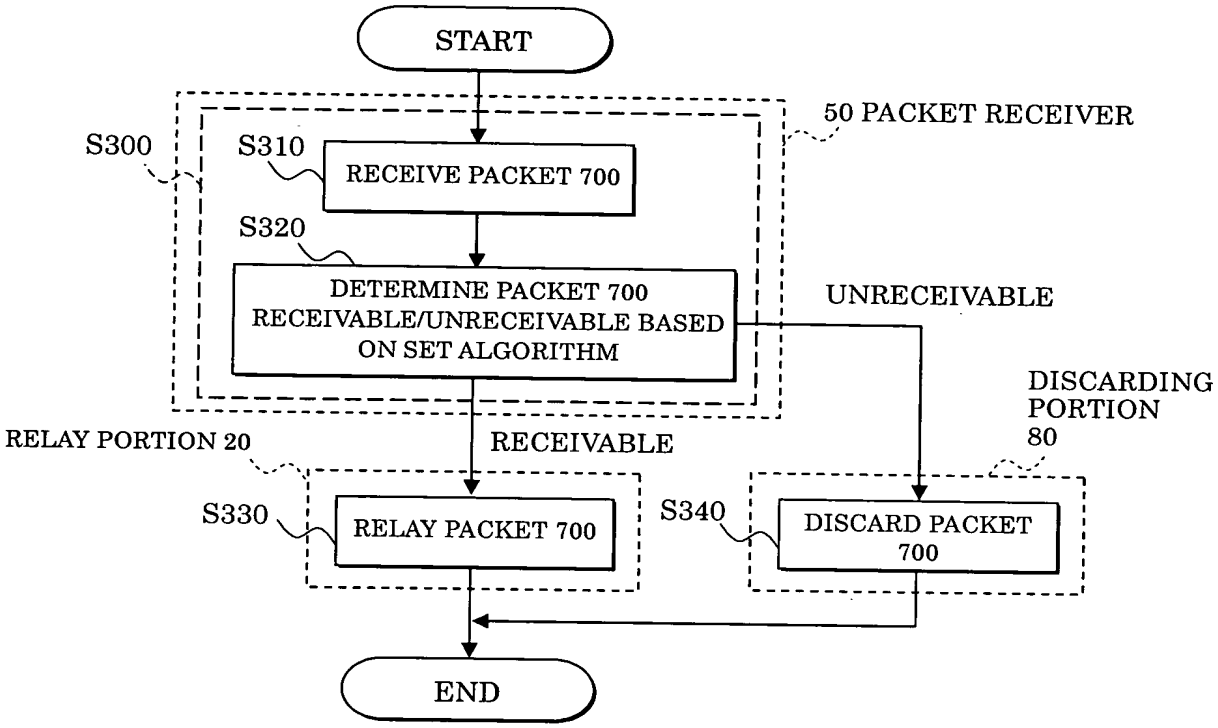

START
50 PACKET RECEIVER
S300
S310
RECEIVE PACKET 700
S320
DETERMINE PACKET 700 RECEIVABLE/UNRECEIVABLE BASED ON SET ALGORITHM
UNRECEIVABLE
DISCARDING PORTION 80
RELAY PORTION 20
RECEIVABLE
S330
RELAY PACKET 700
S340
DISCARD PACKET 700
END

FIG.9

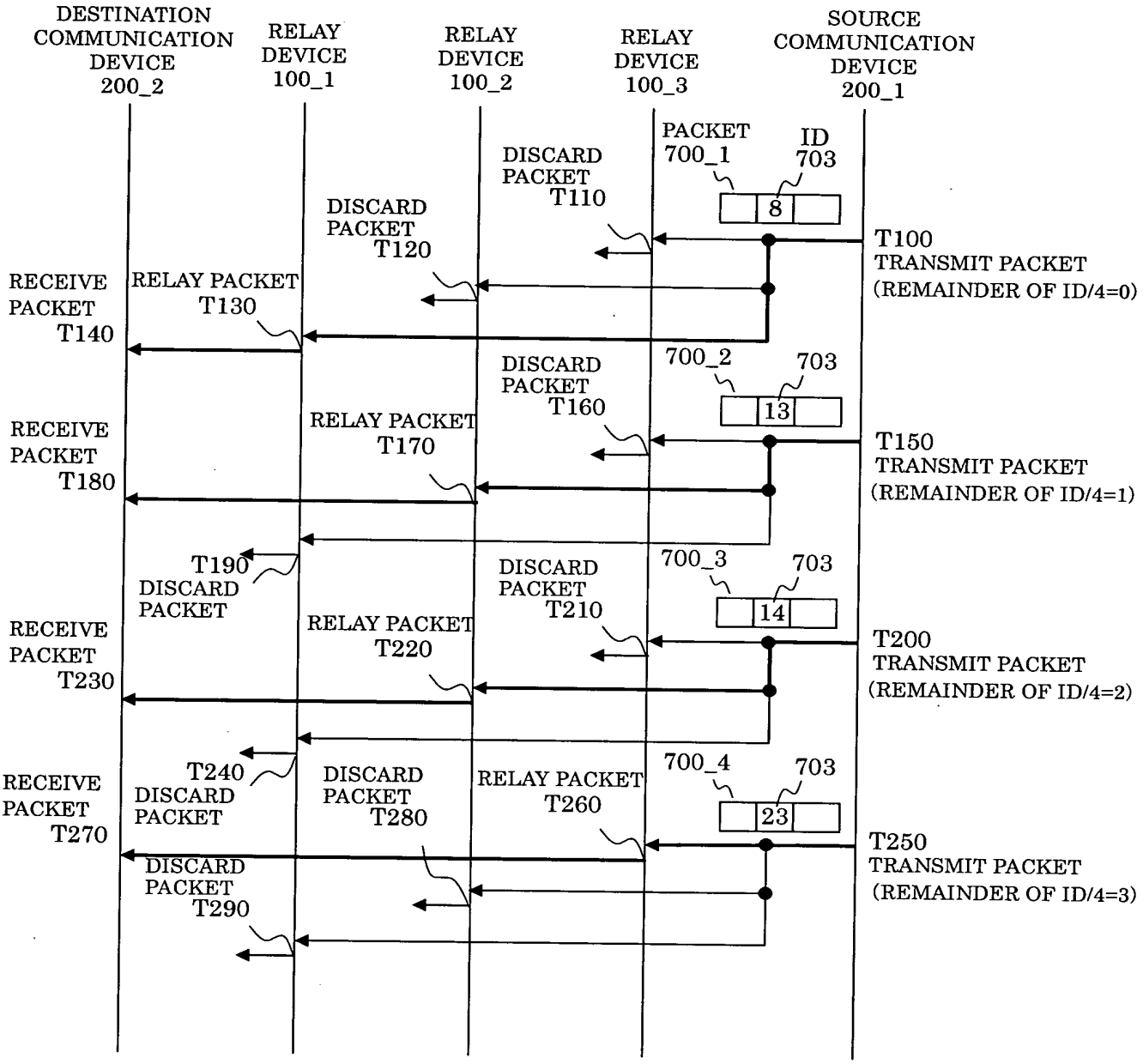

DESTINATION COMMUNICATION DEVICE 200_2
RELAY DEVICE 100_1
RELAY DEVICE 100_2
RELAY DEVICE 100_3
SOURCE COMMUNICATION DEVICE 200_1
PACKET 700_1
ID 703
8
DISCARD PACKET T110
DISCARD PACKET T120
T100 TRANSMIT PACKET (REMAINDER OF ID/4=0)
RECEIVE PACKET T140
RELAY PACKET T130
700_2
703
13
DISCARD PACKET T160
RELAY PACKET T170
T150 TRANSMIT PACKET (REMAINDER OF ID/4=1)
RECEIVE PACKET T180
T190 DISCARD PACKET
700_3
703
14
DISCARD PACKET T210
RELAY PACKET T220
T200 TRANSMIT PACKET (REMAINDER OF ID/4=2)
RECEIVE PACKET T230
T240 DISCARD PACKET
DISCARD PACKET T280
700_4
703
23
RELAY PACKET T260
RECEIVE PACKET T270
T250 TRANSMIT PACKET (REMAINDER OF ID/4=3)
DISCARD PACKET T290

FIG.10

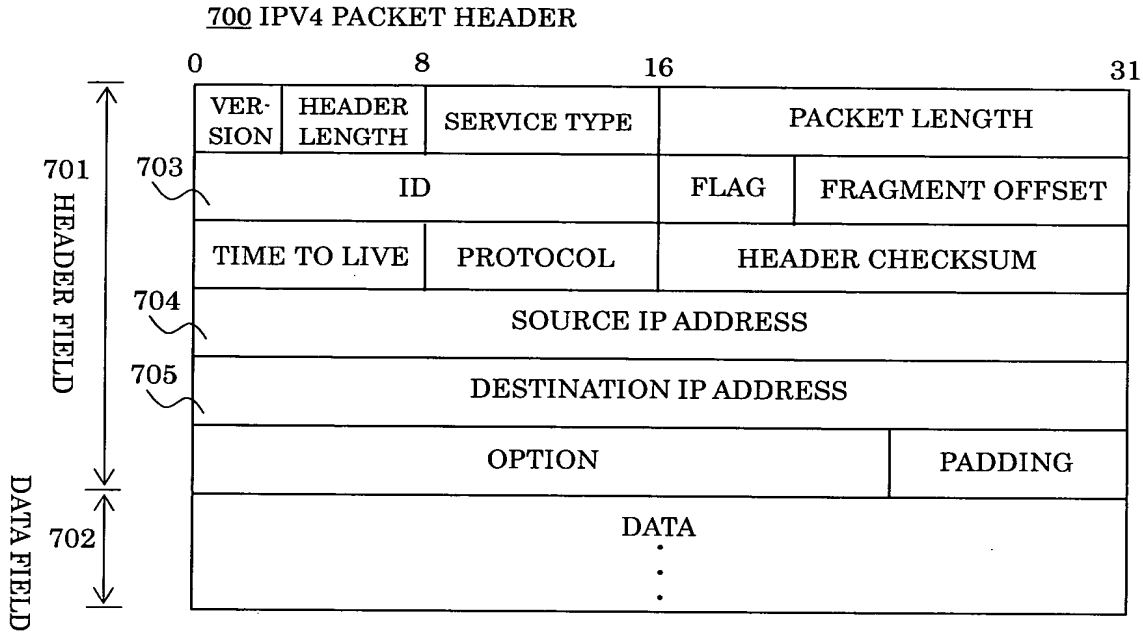

700 IPV4 PACKET HEADER
0
8
16
31
VER-SION
HEADER LENGTH
SERVICE TYPE
PACKET LENGTH
ID
FLAG
FRAGMENT OFFSET
TIME TO LIVE
PROTOCOL
HEADER CHECKSUM
SOURCE IP ADDRESS
DESTINATION IP ADDRESS
OPTION
PADDING
DATA
701
HEADER FIELD
702
DATA FIELD
703
704
705

FIG.11

PRIOR ART

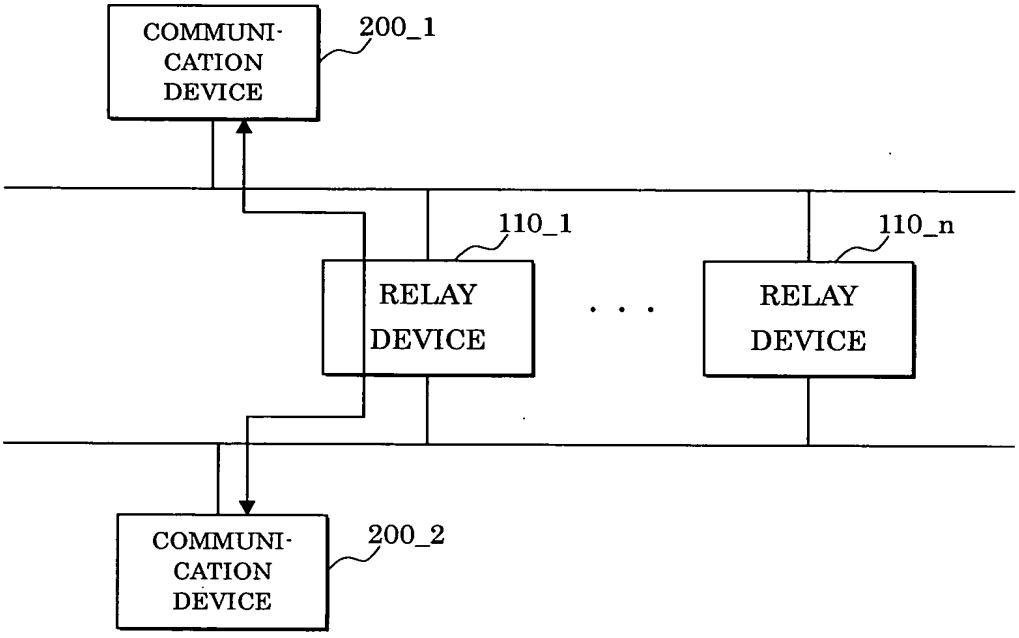
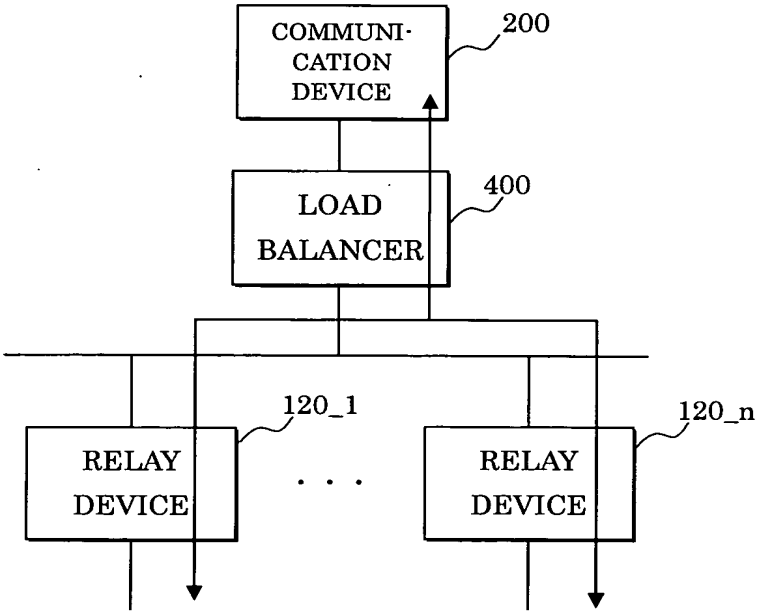


FIG.12

PRIOR ART